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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/665,149	09/22/2003	Tomoaki Takahashi	Q77106	5778
23373	7590	08/05/2004	EXAMINER	
SUGHRUE MION, PLLC 2100 PENNSYLVANIA AVENUE, N.W. SUITE 800 WASHINGTON, DC 20037			HUFFMAN, JULIAN D	
			ART UNIT	PAPER NUMBER
				2853

DATE MAILED: 08/05/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No.	Applicant(s)
	10/665,149	TAKAHASHI ET AL.
	Examiner	Art Unit
	Julian D. Huffman	2853

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on 22 September 2003.
- 2a) This action is **FINAL**.                                    2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 1-8 and 38-41 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_\_ is/are allowed.
- 6) Claim(s) 1-8 and 38-40 is/are rejected.
- 7) Claim(s) 41 is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 22 September 2003 is/are: a) accepted or b) objected to by the Examiner. Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a). Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) All    b) Some \*    c) None of:
    1. Certified copies of the priority documents have been received.
    2. Certified copies of the priority documents have been received in Application No. 09/768,811.
    3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- 1) Notice of References Cited (PTO-892)
- 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) Notice of Informal Patent Application (PTO-152)
- 6) Other: \_\_\_\_\_

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1-3, 5 and 38-40 are rejected under 35 U.S.C. 102(e) as being anticipated by Takahashi.

Takahashi discloses an inkjet recording apparatus comprising:  
a recording head provided with a pressure generating element (fig. 7a);  
a scanning mechanism for moving the recording head in a main scanning direction (column 2, lines 40-41);  
a data developer for developing print data into multi-bit jetting data (RGB print data is developed into multi-bit jetting data and provided to CPU through print data receiver);  
a drive signal generator for generating a drive signal including a plurality of drive pulses, on every unit print cycle (220, 222);  
a translator for translating the multi bit jetting data into pulse select information associated with the respective drive pulses (element 210, column 7, lines 35-44, CPU accesses RAM and retrieves drive waveforms based on the multi bit jetting data);

a drive pulse supplier for selectively supplying at least one of the drive pulses to the pressure generating element in accordance with the pulse select information to drive the pressure generating element (187, 188);

a basic recording mode for recording a dot having a size which is selected from one of a plurality of sizes, in a basic unit pixel which is associated with a unit recording area corresponding to the unit print cycle (column 9, lines 61-64, the dot size recorded on the page is adjusted by adjusting the number of ink droplets fired to form different gradation levels);

a high-resolution recording mode for recording a dot in a fine unit pixel, a plurality of fine unit pixels being arranged within the unit recording area in the main scanning direction (figs. 5a, 5b, since the high resolution recording mode prints at 720dpi and the basic mode prints at 360dpi, the high resolution mode is capable of printing two droplets of ink in a basic unit recording area);

a mode selector for selecting one of plural recording modes, in accordance with the print data, including the basic recording mode and the high-resolution recording mode (element 210, column 7, lines 39-42);

wherein the number of gradation levels that can be recorded in the basic recording mode is larger than the number of gradation levels that can be recorded in the high-resolution recording mode (fig. 6, column 9, lines 61-63);

wherein the data developer develops the print data into the jetting data so as to indicate the size of the dot to be recorded in the basic unit pixel when the mode selector selects the basic recording mode, such that bits therein indicate the size of the dot to be

recorded (the data developer receives bit data which indicates the drop size and selects drive waveforms which print a dot of the specified size);

wherein the data developer develops the print data into jetting data such that each bit therein indicates whether recording is conducted or not in each associated fine unit pixel, when the mode selector selects the high-resolution recording mode (the data developer receives bit data which indicates which drops are fired);

wherein the translator is provided with waveform select tables associated with the respective recording modes (column 7, lines 35-44, ROM stores drive waveforms for each resolution mode);

wherein each waveform select table defines a correspondence between the jetting data and the pulse select information in the associated recording mode; and

wherein the translator translates the jetting data into the pulse select information with reference to the waveform select table of the recording mode selected by the mode selector (column 7, lines 35-44, translator retrieves drive waveform for the recording mode specified);

In Takahashi print data is expressed as bit data, specifically, bits indicate if recording is performed at each pixel location, and also the gradation level or drop size for each pixel location. Further, as the CPU is a processor, it must manipulate a computer program which would be expressed in bit data, and translate the bit data into analog pulses through the ROM, which are then supplied to the piezoelectric ejectors.

***Claim Rejections - 35 USC § 103***

**3.** The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

**4.** Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Takahashi in view of Murayama et al. (6,130,700)

Takahashi does not disclose a rewritable table.

However, Murayama et al. teaches the benefits of using a rewritable table (column 11, lines 3-9).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the table of Kubota as modified so as to be rewritable. The reason for performing the modification would have been to enabling the table to be initially set at time of manufacture/shipping and to further enable the table to be updated at a future date by a user.

**5.** Claims 6 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takahashi in view of Kubo (U.S. 6,257,688).

Takahashi discloses pulses of different widths.

Takahashi does not disclose pulses of an identical profile spaced at constant intervals.

Kubo discloses that pulse width modulation and pulse number modulation (adjusting the width of the driving pulse or the number of identical driving pulses to control drop size) are equivalent structures in the art (column 8, lines 10-15). Therefore, because these two methods of controlling drop size were art recognized equivalents at the time the invention was made, one of ordinary skill in the art would have found it obvious to substitute pulse width modulation for pulse number modulation.

6. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Takahashi in view of Kubo.

Takahashi discloses a carriage but does not disclose a trigger for starting a print cycle derived from a scanning mechanism.

In scanning head ink jet printers an encoder is typically provided to detect the position of the carriage and control the print cycle to correctly position the drops on the paper.

Kubo discloses a carriage with an encoder for triggering the start of a print cycle (column 5, lines 60-65).

It would have been obvious to one having ordinary skill in the art at the time of the invention to provide the encoder of Kubo in the invention of Takahashi. The reason for doing such would have been to enable proper positioning of droplets on the recording medium.

***Allowable Subject Matter***

7. Claim 41 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The prior art of record does not disclose recording of the basic unit pixel and the fine unit pixel being performed by a single movement of the head in the main scanning direction. In Takahashi, the recording modes are not changed during one printing pass.

***Conclusion***

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Julian D. Huffman whose telephone number is (571)272-2147. The examiner can generally be reached Monday through Friday from 9:00 a.m. to 5:30 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Meier, can be reached at (571) 272-2149. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

  
JH

July 23, 2004

  
Thinh Nguyen  
Primary Examiner  
Technology Center 2800